

CLAIMS

What is claimed is:

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1. A method for storing a graphic for a graphic user interface, the method comprising:
dividing the graphic into sub-graphics based on a color characteristic of the graphic; and
storing configuration information of the sub-graphics.
2. The method of claim 1, further comprising:
compressing and storing data of the sub-graphics.
3. The method of claim 2, wherein if a plurality of sub-graphics with a same color characteristic among the sub-graphics exist, data of one sub-graphic among the plurality of sub-graphics is compressed and stored.
4. The method of claim 3, wherein the configuration information includes coordinate data of the sub-graphics, size data of the sub-graphics, and information needed for reading the compressed data of the sub-graphics.
5. The method of claim 2, wherein the data of sub-graphics are compressed using a Huffman coding method.
6. The method of claim 1, wherein each of the sub-graphics is one among a background graphic and an object graphic of the graphic.
7. The method of claim 1, wherein each of the sub-graphics is one among a sub-graphic with a gradient characteristic and a sub-graphic without a gradient characteristic.

8. The method of claim 7, wherein if one of the sub-graphics is the sub-graphic with the gradient characteristic, the configuration information includes a representative index of pixels included in the one sub-graphic, coordinate data of the one sub-graphic, size data of the one sub-graphic, and identification information of a corresponding graphic,

if the one sub-graphic is the sub-graphic without the gradient characteristic, the configuration information includes all indexes of pixels included in the one sub-graphic, coordinate data of the one sub-graphic, size data of the one sub-graphic, and identification information of a corresponding graphic.

9. The method of claim 8, wherein if a unit graphic including a plurality of representative indexes is detected in the one sub-graphic with the gradient characteristic, the configuration information further includes information indicating a start location of the unit-graphic in the one sub-graphic.

10. A method of reconstructing a graphic for a graphic user interface in a system that divides the graphic into sub-graphics and stores configuration information for the divided sub-graphics, the method comprising:

determining the sub-graphics required for reconstructing the graphic;

reading configuration information of the determined sub-graphics and reconstructing the determined sub-graphics; and

combining the reconstructed sub-graphic based on the configuration information and displaying the combined result.

11. The method of claim 10, wherein if the data of sub-graphic is not included in the configuration information, then the reconstructing the determined sub-graphics comprises:

reading compressed data of the sub-graphics based on the configuration information;
and

decompressing the compressed data of the sub-graphics and generating the decompressed result as a reconstructed sub-graphic.

12. The method of claim 11, wherein the data of the sub-graphics is an index corresponding to a color value of a pixel.

13. The method of claim 10, wherein if the data of sub-graphics is included in the configuration information, then reconstructing the determined sub-graphics comprises:

dividing the sub-graphics into a first sub-graphic with a gradient characteristic and a second sub-graphic without a gradient characteristic on the basis of the configuration information;

reconstructing the first sub-graphic using a graphic generation algorithm; and
generating data of the second sub-graphic as a reconstructed sub-graphic.

14. The method of claim 13, wherein the configuration information is indexed corresponding to color values of pixels included in the sub-graphics.

15. The method of claim 14, wherein if the first sub-graphic has one index, the graphic generation algorithm generates as a reconstructed sub-graphic of the first sub-graphic a sub-graphic such that all pixels have the index, and

if the first sub-graphic has a unit graphic consisting of a plurality of indexes, the graphic generation algorithm copies the unit graphic in a predetermined direction from a start location of the unit graphic and when a sub-graphic reaching a size of the first sub-graphic is formed, generates the formed sub-graphic as a reconstructed sub-graphic.

16. An apparatus for storing a graphic for a graphic user interface, the apparatus comprising:

a graphic divider dividing the graphic into sub-graphics according to a color characteristic of the graphic;

a compression unit compressing the sub-graphics divided by the graphic divider;

a first storage unit storing data of the sub-graphics compressed by the compression unit;

a second storage unit storing configuration information for the sub-graphics divided by the graphic divider; and

a system controller, controlling the compression unit and the first storage unit so that if a plurality of sub-graphics with a same graphic color characteristic among the divided sub-graphics exist, data of one sub-graphic among the plurality of sub-graphics is compressed and stored, adding information needed for reading data of the sub-graphics stored in the first storage unit to the configuration information and stores the configuration information in the second storage unit.

17. An apparatus for storing a graphic for a graphic user interface, the apparatus comprising:
- a graphic divider dividing the graphic into sub-graphics according to a color characteristic of the graphic;
 - a detector detecting configuration information of the sub-graphics divided by the graphic divider; and
 - a memory storing the configuration information detected by the detector.
18. The apparatus of claim 17, wherein the configuration information includes indexes of pixels included in the sub-graphics.
19. An apparatus for reconstructing a graphic for a graphic user interface in a system including a graphic divider dividing the graphic into sub-graphics, a first memory storing compressed data of the divided sub-graphics, and a second memory storing configuration information of the divided sub-graphics, the apparatus comprising:
- a decompression unit decompressing data of sub-graphics read from the first memory;
 - a system controller determining one or more]determining the sub-graphics needed for reconstructing the required graphic with reference to the configuration information and reading data of the sub-graphics from the first memory with reference to configuration information of the determined sub-graphics if a user requires the reconstruction of a graphic; and
 - a graphic reconstruction unit combining the decompressed sub-graphics transmitted from the decompression unit on the basis of the configuration information provided from the system controller and generating the combined result as a reconstructed graphic.
20. An apparatus for reconstructing a graphic for a graphic user interface in a system including a graphic divider for dividing the graphic into sub-graphics and a memory for storing configuration information of the divided sub-graphics, the apparatus comprising:
- a system controller determining one or more]determining the sub-graphics needed for reconstructing the required graphic with reference to the configuration information and reading configuration information for the determined sub-graphics from the memory if a user requires the reconstruction of a graphic;

a graphic data classification unit classifying the sub-graphics into a first sub-graphic with gradient characteristic and a second sub-graphic without gradient characteristic on the basis of the configuration information if the configuration information is received from the memory;

a graphic generator, if data of the first sub-graphic is received from the graphics data classification unit, reconstructing the sub-graphics using the data of the first sub-graphic; and

a graphic reconstruction unit combining the reconstructed sub-graphics transmitted from the graphic generator and graphic data of the second sub-graphic transmitted from the graphic data classification unit on the basis of the configuration information provided from the system controller and generating the combined result as a reconstructed graphic.

21. A method of storing and reconstructing a graphic for a graphic user interface in a system, the method comprising:

dividing graphic data into sub-graphics having similar color characteristics;

storing configuration information of each of the sub-graphics;

reading the configuration information of each of the sub-graphics required for generating the graphic corresponding to a user request and reconstructing each of the sub-graphics required for generating the graphic; and

combining each of the reconstructed sub-graphics based on the configuration information and displaying the combined result as a reconstructed graphic.

22. The method of claim 21, wherein dividing the graphic data into sub-graphics comprises dividing the graphic data into sub-graphics according to color characteristic of the graphic.

23. The method of claim 22, wherein the dividing graphical data into sub-graphics further comprises dividing the graphic data into at least one background graphic and at least one object graphic.

24. The method of claim 23, wherein each of the at least one background graphic includes pixels with similar color values.

25. The method of claim 24, further comprising compressing graphic data of each of the sub-graphics.

26. The method of claim 25, further comprising decompressing the compressed graphic data after reading the compressed data of the sub-graphics based on the configuration information.

27. The method of claim 25, further comprising using a Huffman coding method for compressing and decompressing graphic data of each of the sub-graphics, wherein the sub-graphics are composed of pixels having similar index values.

28. The method of claim 27, further comprising determining whether the sub-graphics with a similar index value exist among the divided sub-graphics, wherein
if the sub-graphics with the similar index values exist among the divided sub-graphics, compressing and storing the graphic data of a single sub-graphic among the sub-graphics with the similar index values and compressing and storing the graphic data of each of the sub-graphics with different index values; and
if the sub-graphics with similar index values do not exist among the divided sub-graphics, compressing and storing the graphic data of all of the sub-graphics.

29. The method of claim 28, wherein configuration information for compressing the sub-graphics includes at least one of coordinate data of each of the sub-graphics, size data of each of the sub-graphics, and information needed for reading the compressed data of each of the sub-graphics.

30. The method of claim 29, wherein when the graphic is required by a user command, compressed graphic data of each of the corresponding sub-graphics is read with reference to the configuration information of each of the corresponding sub-graphics.

31. The method of claim 30, wherein displaying the combined result as a reconstructed graphic further comprises combining the decompressed data of each of the sub-graphics with reference to the configuration information.

32. The method of claim 31, wherein repeatedly copying each of the decompressed sub-graphics to form a reconstructed sub-graphic and combining the reconstructed sub-graphic with at least one corresponding sub-graphic to form an original graphic.

33. The method of claim 21, wherein the dividing the graphic data comprises dividing the graphic into sub-graphics according to a color characteristic of the graphic, wherein the graphic is divided into sub-graphics with gradient characteristics and sub-graphics without gradient characteristics.

34. The method of claim 33, further comprising recognizing the color characteristic of the graphic by indexes corresponding to color values of pixels included in the graphic.

35. The method of claim 34, further comprising detecting configuration information of each of the sub-graphics, wherein configuration information of the sub-graphic with gradient characteristics comprises detecting at least one of coordinate data of each of the sub-graphics, size data of each of the sub-graphics, and a representative index of each of the sub-graphics, and configuration information of the sub-graphic without gradient characteristics, comprises detecting at least one of coordinate data of each of the sub-graphics, size data of each of the sub-graphics, and all indexes of pixels included in each of the sub-graphics.

36. The method of claim 35, wherein if the sub-graphic with gradient characteristics includes a unit graphic comprising a plurality of representative indexes, the configuration information further comprises coordinate data of the unit graphic at which the unit graphic is first repeated.

37. The method of claim 36, wherein the storing of configuration information includes storing the configuration information detected for each of the sub-graphics.

38. The method of claim 36, wherein upon receiving the user request requiring generation of the graphic, determining the sub-graphics corresponding to the graphic required by the user and reading configuration information of the determined sub-graphics.

39. The method of claim 38, further comprising dividing the read sub-graphics into sub-graphics with gradient characteristics and sub-graphics without gradient characteristics.

40. The method of claim 39, wherein each of the sub-graphics with gradient characteristic is a graphic in which unit graphic is repeatedly formed in a predetermined direction from a predetermined location on the graphic and each of the sub-graphic without gradient characteristic is a graphic in which unit graphic is formed in an irregular pattern on the graphic.

41. The method of claim 40, further comprising reconstructing a corresponding sub-graphic using configuration information for sub-graphics with gradient characteristics and all data of the read sub-graphics for sub-graphics without gradient characteristics.

42. The method of claim 41, further comprising applying a graphic generation algorithm to only the sub-graphics with gradient characteristics when generating the graphic in order to reduce a graphic loading time.

43. The method of claim 24, comprising decompressing the compressing sub-graphics according to a control, wherein the control provides configuration information including coordinate data and size data of sub-graphics for graphic reconstruction.

44. The method of claim 21, further comprising, wherein when the user requests the generation of the graphic, determining which sub-graphics to be included in the required graphic based on the identification information of the graphic stored, reading configuration information of the determined sub-graphics, and transmitting the read configuration information to the graphic data classification unit, wherein the sub-graphics are classified into sub-graphics to which a graphic generation algorithm is applied and sub-graphics to which the graphic generation algorithm is not applied, on the basis of the transmitted configuration information.

45. The method of claim 21, wherein the configuration information for reading the sub-graphics includes at least one of identification information of the graphic corresponding to the sub-graphics and an address of a memory storing the corresponding graphic data.

46. An apparatus for storing and reconstructing a graphic for a graphic user interface, the apparatus comprising:

- a graphic divider to divide graphic data into sub-graphics having similar color characteristics;
- a compression unit to compress the graphic data of each of the sub-graphics divided by the graphic divider;
- a plurality of storage units to store the compressed graphic data and configuration information for the sub-graphics divided by the graphic divider
- a system controller to control the compression unit and the plurality of storage units, read configuration information of the compressed graphic data of each of the sub-graphics, and determine which sub-graphics are required for reconstructing the required graphic with reference to the configuration information;
- a decompression unit to decompress data of each of the sub-graphics required for generating the graphic corresponding to a user request; and
- a graphic reconstruction unit to combine each of the decompressed sub-graphics transmitted from the decompression unit on the basis of the configuration information provided from the system controller, and generate the combined result as a reconstructed graphic displayed on a display unit.

47. The apparatus of claim 46, wherein the graphic data provider provides configuration information of the sub-graphics to the system controller while outputting the graphic data of the sub-graphics to the compression unit.

48. The apparatus of claim 46, wherein the system controller controls the compression unit and a first storage unit so that if sub-graphics with a same graphic color characteristic among the divided sub-graphics exist, data of only one sub-graphic among the sub-graphics is compressed and stored, and adds information needed for reading data of the sub-graphics stored in the first storage unit to the configuration information and stores the configuration information in a second storage unit.

49. The apparatus of claim 46, further comprising a user command input unit to enable a user to input a command through the graphic user interface.

50. The apparatus of claim 46, wherein the configuration information includes indexes of pixels in each of the sub-graphics.

51. The apparatus of claim 46, wherein the display unit includes a graphic engine displaying a graphic for the graphic user interface.

52. An apparatus for storing and reconstructing a graphic for a graphic user interface, wherein the apparatus includes a memory unit storing configuration information, and comprises:

- a graphic data divider to divide graphic data into sub-graphics having similar color characteristics;

- a detector to detect configuration information of the sub-graphics divided by the graphic divider;

- a system controller to determine which of the sub-graphics are required sub-graphics for reconstructing the graphic with reference to the configuration information and reading configuration information for each of the determined sub-graphics from the memory unit;

- a graphic data classification unit to classify each of the sub-graphics on the basis of configuration information; and

- a graphic reconstruction unit, connected to the graphic data classification unit, to generate a reconstructed graphic displayed on a display unit.

53. The apparatus of claim 52, wherein the graphic data classifier classifies each of the sub-graphics into a first sub-graphic with a gradient characteristic and a second sub-graphic without a gradient characteristic on the basis of the configuration information.

54. The apparatus of claim 52, further comprising a graphic generator to reconstruct sub-graphics using data of the sub-graphics received from the graphics data classification unit.

55. The apparatus of claim 54, wherein the graphic reconstruction unit combines the reconstructed sub-graphics transmitted from the graphic generator and graphic data of the sub-graphics transmitted from the graphic data classification unit on the basis of the configuration information provided from the system controller, and generating the combined result as the reconstructed graphic.

56. The apparatus of claim 55, wherein the display unit comprises a graphic engine to display the graphic for the graphic user interface.